09/929356

CofC

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the patent of:

Tameo YANAGINO et al

ATTN: Certificates of Corrections

Patent Number: 7,225,140 B2

Issued: May 29, 2007

For: METHOD OF AND SYSTEM FOR FORECASTING FUTURE
         ORDERS IN PARTS INVENTORY SYSTEM

Certificate

REQUEST FOR CERTIFICATE OF CORRECTION   OCT 1 2 2007

of Correction

Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450   October 10, 2007

Sir:

The undersigned respectfully requests that a Certificate of Correction be issued for

the above-identified patent as indicated on the attached Form PTO-1050.
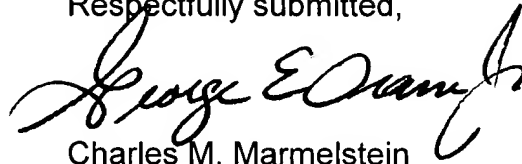

REMARKS

This request is being made in order to correct errors noted in the claims. In support

of this request, enclosed are copies of the Response dated October 25, 2005, and the

Response dated September 14, 2006, in which the amendments to the claims, as cited on

the attached Form PTO-1050, were made.

Since the error in the patent appears to be a Patent and Trademark Office printing

error, it is respectfully submitted that no fee is required. However, in the event that any

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fees are due with respect to this paper, please charge our Deposit Account No. 01-2300,

referencing Atty. Docket No. 107101-00036.

Respectfully submitted,

Charles M. Marmelstein
Reg. No. 25,895 *27931*

Atty. Docket No.: 107101-00036

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Arent Fox LLC
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CMM:mmg

Enclosures: Form PTO-1050 (2); Response of October 25, 2005 (copy);
Response of September 14, 2006 (copy)

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UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO.:   7,225,140 B2

DATED: May 29, 2007

INVENTOR(S):   Tameo YANAGINO et al

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

IN THE CLAIMS:

Claim 8, line 16, delete "to" and substitute therefor -- of --.

Claim 9, line 1, after "including" and insert therefor -- the steps --.

MAILING ADDRESS OF SENDER:

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ARENT FOX LLP
1050 Connecticut Avenue, N.W., Suite 400
Washington, D.C. 20036-5339

Patent No. 7,225,140 B2

No. of add'l. copies
@ 30¢ per page

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FORM PTO 1050 (REV. 3-82)

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UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO.: 7,225,140 B2

DATED: May 29, 2007

INVENTOR(S): Tameo YANAGINO et al

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

IN THE CLAIMS:

Claim 8, line 16, delete "to" and substitute therefor -- of --.

Claim 9, line 1, after "including" and insert therefor -- the steps --.

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FORM PTO 1050 (REV. 3-82)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:	Confirmation No: 8870
Tameo YANAGINO et al.	Attorney Docket No: 107101-00036
Serial Number: 09/929,356	Group Art Unit: 3623
Filed: August 15, 2001	Examiner: Tamara L. GRAYSAY

For: METHOD OF AND SYSTEM FOR FORECASTING FUTURE ORDERS IN PARTS INVENTORY SYSTEM

RESPONSE UNDER 37 C.F.R. § 1.121

MAIL STOP AMENDMENT
Commissioner for Patents
P.O. BOX 1450
Alexandria, VA 22313-1450   Date: October 25, 2005

Sir:

This paper is in reply to the Office Action dated June 30, 2005, the period to respond being extended one (1) month from September 30, 2005 to October 30, 2005 by the enclosed Petition for Extension of Time.

Amendments to the specification begin on page 2.

Amendments to the claims begin on page 3.

Remarks/arguments begin on page 10.

IN THE SPECIFICATION

Please amend the paragraph on page 9, lines 3-8 of the specification as follows:

The "ratio of number of orders" is the ratio of the number of orders after order expired to the number of orders before order expired. More specifically: ratio of number of orders = (number of orders in month in which orders occurred after orders were nil for 24 months) / (number of orders immediately before orders were nil for 24 months). Simply stated, the ratio of number of orders is the ratio between number of orders ~~before~~ after and ~~after~~ before order expired.

Please amend the paragraph on page 11, lines 4-7 of the specification as follows:

Based on the data, the calculated result display ENG 10h forecasts (calculates) the future number of orders of the very-low-order-rate (1) parts and displays or prints the result of the forecast by means of a cathode ray tube ("CRT") ~~CRT~~ or printer (neither shown).

Please amend the paragraph on page 13, lines 20-24 as follows:

In Figure 13, L1 is a straight regression line obtained solely ~~form~~ from known data and L2 is a straight regression line obtained from known data and a value Md obtained by modified Monte Carlo simulation. In the figure, the straight regression line L1 is presented only as a reference. The straight regression line L2 is used in the future order forecasting method of this embodiment.

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IN THE CLAIMS

1.　**(Currently Amended)**　A method of forecasting future orders of parts for products sold to customers, comprising the steps of:

determining a time-course record of orders with respect to each part and extracting low-order-rate parts whose order records show order rate to have fallen below ~~the~~ a predetermined level;

determining from each such order record at least one parameter indicating a characteristic of orders after the order rate fell below the predetermined level, classifying the extracted low-order-rate parts into multiple categories and using the parameter indicating the characteristic of orders to calculate for each of the multiple categories an order occurrence probability distribution;

carrying out Monte Carlo simulation based on the calculated order occurrence probability distributions to determine occurrence rate probability distributions of number of orders during a predetermined period; and

forecasting future number of orders of the low-order-rate parts based on the calculated occurrence rate probability distributions of number of orders during the predetermined period.

2.　**(Currently Amended)**　A method according to claim 1, further including the steps of:

determining a time-course record of orders with respect to each part and extracting second low-order-rate parts whose order records show order rate to have fallen below a second predetermined level higher than said predetermined level;

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classifying the extracted second low-order-rate parts into multiple categories and

using the parameter indicating the characteristic of orders to calculate for each of the

multiple categories an order occurrence probability distribution;

carrying out Monte Carlo simulation based on the calculated order occurrence

probability distributions of the second low-order-rate parts to determine occurrence rate

probability distributions of number of orders during a predetermined period;

calculating future number of orders of the second low-order-rate parts based on

the calculated occurrence rate probability distributions of number of orders during the

predetermined period; and

forecasting the future number of orders of the second low-order-rate parts by

regression analysis based on order records before order rate fell below the second

predetermined level and the calculated number of orders.

3.   **(Original)**   A method according to claim 1, wherein the parameter

indicating the characteristic of orders is at least one of an order occurrence interval and

a ratio of number of orders.

4.   **(Original)**   A method according to claim 2, wherein the parameter

indicating the characteristic of orders is at least one of an order occurrence interval and

a ratio of number of orders.

5.   **(Original)**   A method according to claim 3, wherein the ratio of number

of orders is a ratio of the number of orders after order expired to the number of orders

before order expired.

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6.   **(Original)**   A method according to claim 4, wherein the ratio of number of orders is a ratio of the number of orders after order expired to the number of orders before order expired.

7.   **(Currently Amended)**   A method of forecasting future orders of parts for products sold to customers, comprising the steps of:

determining a time-course record of orders with respect to each part and extracting low-order-rate parts whose order records show order rate to have fallen below ~~the~~ a predetermined level;

determining from each such order record an order occurrence probability distribution as a function of time and an order occurrence probability distribution as a function of a ratio of number of orders;

carrying out Monte Carlo simulation based on the calculated order occurrence probability distributions to determine occurrence rate probability distributions of number of orders during a predetermined period; and

forecasting future number of orders of the low-order-rate parts based on the calculated occurrence rate probability distributions of number of orders during the predetermined period.

8.   **(Original)**   A method according to claim 7, wherein the ratio of number of orders is a ratio of the number of orders after order expired to the number of orders before order expired.

9.   **(Original)**   A method according to claim 7, wherein the extracted low-order-rate parts are classified into multiple categories and the order occurrence probability distribution is determined for each of the multiple categories.

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10. **(Original)**   A method according to claim 1, further including the steps of:

checking accuracy of the forecast number of orders; and

changing the categories based on a result of checking.

11. **(Original)**   A method according to claim 7, further including the steps of:

checking accuracy of the forecast number of orders; and

changing the categories based on a result of checking.

12. **(Currently Amended)**   A system for forecasting future orders of parts for products sold to customers, comprising:

time-course order record determining means for determining a time-course record of orders with respect to each part and extracting low-order-rate parts whose order records show order rate to have fallen below ~~the~~ a predetermined level;

order occurrence probability distribution determining means for determining from each such order record at least one parameter indicating a characteristic of orders after the order rate fell below the predetermined level, and for classifying the extracted low order-rate parts into multiple categories and using the parameter indicating the characteristic of orders to calculate for each of the multiple categories an order occurrence probability distribution;

Monte Carlo simulation means for carrying out Monte Carlo simulation based on the calculated order occurrence probability distributions to determine occurrence rate probability distributions of number of orders during a predetermined period; and

forecasting means for forecasting future number of orders of the low-order-rate parts based on the calculated occurrence rate probability distributions of number of orders during the predetermined period.

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13.   **(Currently Amended)**   A system according to claim 12, further including:

second time-course order record determining means for determining a time-course record of orders with respect to each part and extracting second low-order-rate parts whose order records show order rate to have fallen below a second predetermined level higher than said predetermined level;

second order occurrence probability distribution determining means for classifying the extracted second low-order-rate parts into multiple categories and using the parameter indicating the characteristic of orders to calculate for each of the multiple categories an order occurrence probability distribution;

Monte Carlo simulation means for carrying out Monte Carlo simulation based on the calculated order occurrence probability distributions of the second low-order-rate parts to determine occurrence rate probability distributions of number of orders during a predetermined period;

order calculating means for calculating future number of orders of the second low-order-rate parts based on the calculated occurrence rate probability distributions of number of orders during the predetermined period; and

forecasting means for forecasting the future number of orders of the second low order-rate parts by regression analysis based on order records before order rate fell below the second predetermined level and the calculated number of orders.

14.   **(Original)**   A system according to claim 12, wherein the parameter indicating the characteristic of orders is at least one of an order occurrence interval and a ratio of number of orders.

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15.   (**Original**)   A system according to claim 13, wherein the parameter indicating the characteristic of orders is at least one of an order occurrence interval and a ratio of number of orders.

16.   (**Original**)   A system according to claim 14, wherein the ratio of number of orders is a ratio of the number of orders after order expired to the number of orders before order expired.

17.   (**Original**)   A system according to claim 15, wherein the ratio of number of orders is a ratio of the number of orders after order expired to the number of orders before order expired.

18.   (**Currently Amended**)   A system for forecasting future orders of parts for products sold to customers, comprising:

time-course order record determining means for determining a time-course record of orders with respect to each part and extracting low-order-rate parts whose order records show order rate to have fallen below ~~the~~ a predetermined level;

order occurrence probability distribution determining means for determining from each such order record an order occurrence probability distribution as a function of time and an order occurrence probability distribution as a function of a ratio of number of orders;

Monte Carlo simulation means for carrying out Monte Carlo simulation based on the calculated order occurrence probability distributions to determine occurrence rate probability distributions of number of orders during a predetermined period; and

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forecasting means for forecasting future number of orders of the low-order-rate parts based on the calculated occurrence rate probability distributions of number of orders during the predetermined period.

19.   (Original)   A system according to claim 18, wherein the ratio of number of orders is a ratio of the number of orders after order expired to the number of orders before order expired.

20.   (Original)   A system according to claim 18, wherein the extracted low-order-rate parts are classified into multiple categories and the order occurrence probability distribution is determined for each of the multiple categories.

21.   (Original)   A system according to claim 12, further including of:

checking means for checking accuracy of the forecast number of orders; and

changing means for changing the categories based on a result of checking.

22.   (Original)   A system according to claim 18, further including the steps of:

checking means for checking accuracy of the forecast number of orders; and

changing means for changing the categories based on a result of checking.

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REMARKS

Claims 1-22 are pending. By this amendment, Claims 1-2, 7, 12-13, and 18 are amended. Applicants respectfully submit that no new matter is presented herein.

Claim 2 and 13 are amended for clarification purposes only and not for any reason related to patentability.

Entry of this Amendment is respectfully requested.

Objections to the Oath/Declaration

The oath and declaration are objected to as being defective, because, although the oath identifies the foreign application, the oath does not state that the foreign application had been filed by the inventor(s) or by the assignee, or the legal representative or agent, of the inventor, or on behalf of the inventor, pursuant to the Manual of Patent Examination Procedure (MPEP) § 201.13(II)(C).   Applicants respectfully traverse the objection.

Applicants respectfully point out that, as indicated on the certified copy of the priority document and the Oath/Declaration filed in the instant case, the inventors of the priority document and the instant application are identical, i.e., the same.

Further, Applicants note "[t]he [MPEP] does not have the force of law or the force of the rules under Title 37 of the Code of Federal Regulations." *See* Forward to MPEP (2d. Rev. 2004). Therefore, the MPEP cannot add to or subtract from the requirements established by a duly enacted statue of the United States Congress or a rule promulgated pursuant to a duly enacted statute by the United States Congress.

An oath or declaration must comply with the requirements set forth in 35 U.S.C. § 119(b)(1), 37 C.F.R. §§ 1.55(a)(1)(i), and 1.63(c)(2).

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35 U.S.C. § 119(b)(1) states that a claim for priority must identify the foreign application by specifying the *application number* on the foreign application, the intellectual property authority or *country in or for which the application was filed*, and the *date of filing the application*, at such time during the pendency of the application as required by the Director.

37 C.F.R. § 1.55(a)(1)(i) states that a claim for priority must identify the foreign application for which priority is claimed, any foreign application for the same subject matter and having a filing date before that of the application for which priority is claimed, by specifying the application number, country, day, month, and year of it's the foreign application's filing.

Under 37 C.F.R. § 1.63(c)(2), in order for an application to claim for priority to a previously filed foreign application, the oath or declaration must identify any foreign application for patent (or inventor's certificate) for which a claim for priority is made pursuant to 37 C.F.R. § 1.55, and any foreign application having a filing date before that of the application on which priority is claimed, by specifying the application number, country, day, month, and year of its filing.

The Oath/Declaration filed in the present application satisfies all of the requirements set forth above. Specifically, the declaration includes a claim for priority (a check in the box indicating such a claim), the application number of the foreign application for which priority is claimed (2000-260918), the country in which the application was filed (Japan), and the date of the filing of the application (August 8, 2000). Therefore, the existing Oath/Declaration, as filed on August 15, 2001, complies with all of the legal requirements set forth in the governing federal statues and rules.

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Moreover, the inventors listed in the priority document and of the present application are identical. Accordingly, Applicants respectfully request withdrawal of the objection.

Objections to the Specification

Page 9, lines 3-8 are objected to because there appears to be an inconsistency as to the explanation of the ratio. Page 11, line 6 is object to because the acronym "CRT" has not first been spelled out prior to the acronym's use. Page 13, line 20 is objected to because the word "form" should be the word "from." The specification has been amended responsive to the objections. Accordingly, Applicants respectfully request withdrawal of the objections.

Objections to the Claims

The Office Action objects to claims under MPEP § 608.01(n), although the Office Action fails to identify which claims are objected to. Nonetheless, in the interest of preventing any needless delay, Applicants presume the Office Action objects to Claims 10 and 21. Applicants respectfully submit that, upon allowance of the pending claims, if appropriate, the claims should be renumbered, wherein Claim 10 is presented before Claim 7 and Claim 21 is presented before Claim 18.

Accordingly, Applicants respectfully request withdrawal of the objection.

Claims rejected—35 U.S.C. § 112

Claims 1-22 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to point out and distinctly claim the subject matter which applicant regards as the invention. Specifically, "the predetermined level" recited in Claims 1, 7, 12, and 18 lacks a proper antecedent basis. Claims 1, 7, 12, and 18 are amended responsive to the rejection.

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Accordingly, Applicants respectfully request withdrawal of the rejection.

Claims rejected—35 U.S.C. § 101

Claims 1-22 are rejected under 35 U.S.C. § 101, because the claimed invention is directed to nonstatutory subject matter. Applicants respectfully traverse the rejection.

Whether an invention recites a mathematical algorithm, alone, is not a basis to reject a claim. *See* MPEP 2106(II). Moreover, the proper inquiry into whether an invention is patentable is whether the claimed invention accomplishes a practical application. That is, the claimed invention must produce a useful, concrete, and tangible result. *See* MPEP § 2106(II)(A) and *State Street Bank & Trust Co. v. Signature Financial Group, Inc.*, 149 F.3d 1368, 1373 (Fed. Cir. 1998). Therefore, the Office Action's assertion on page 5, lines 3-10 that a process encompasses statutory subject matter only when the process requires certain things be done with certain substances is misplaced. While such a process is a type of statutory subject matter, patentable processes are not so limited. *See.e.g.,* MPEP § 2106(II)(A) and *AT&T Corp. v. Excel Communications, Inc.*, 172 F.3d 1352, 1358 (Fed. Cir. 1999) (claims drawn to a long-distance telephone billing process containing mathematical algorithms were held to be directed to patentable subject matter because "the claimed process applies the Boolean principle to produce a useful, concrete, tangible result without pre-empting other uses of the mathematical principle").

What constitutes a "useful, concrete, and tangible result" has been resolved on a case-by-case basis. In one such case, "a useful, concrete, and tangible result" was held to encompass the result of a mathematical calculation. For example, a process that transforms data, representing discrete dollar amounts, by a machine through a

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series of mathematical calculations into a final share price, constitutes a *practical application* of a mathematical algorithm, formula, or calculation, because it produces "a *useful, concrete and tangible result*"--a final share price momentarily fixed for recording and reporting purposes and even accepted and relied upon by regulatory authorities and in subsequent trades. *See State Street Bank & Trust Co.*, 149 F.3d at 1373 (emphasis added).

Moreover, only when a claim is devoid of any limitation to a practical application in the technological arts should it be rejected under 35 U.S.C. § 101. MPEP § 2106(II)(A).

Claims 1-22 are directed to a method and system for forecasting future parts orders in part inventory management, particularly a method and a system for forecasting future number of orders or demand of low-order-rate parts whose order rates have fallen below a predetermined level. Specifically, Claims 1-6 and 10 produce a forecast of future number of orders of low-order-rate parts based on calculated occurrence rate probability distributions of number of orders during a predetermined period. Claims 7-9 and 11 produce a forecast of future number of orders of low-order-rate parts based on calculated occurrence rate probability distributions of number of orders during a predetermined period. Claims 12-17 and 21 recite, among other features, a forecasting means for forecasting future number of order of low-order-rate parts based on calculated occurrence rate probability distributions of number of order during a predetermined period. Claim 18-20 and 22 recite, among other features, a forecasting means for forecasting future number of order of low-order-rate parts based on calculated occurrence rate probability distributions of number of orders during a

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predetermined period. Accordingly, Claims 1-22 do produce a useful, concrete and tangible result, and, therefore, a practical application, and not just a purely mathematical algorithm, contrary to the assertion by the Office Action. Therefore, Claims 1-22 are directed to statutory subject matter.

The Office Action also rejects Claim 12-22 under 35 U.S.C. § 101, because the claims are drawn to a system including a forecasting means for forecasting, which, according to the Office Action, is not supported by the specification. That is, on page 5, lines 13-15, the Office Action asserts that the specification does not reveal a "particular machine or manufacture" for performing the claimed functions of the "forecasting means." Applicants respectfully traverse the rejection.

It appears that the Office Action argues that the specification does not support the scope of the claims. However, 35 U.S.C. § 101 does not address such issues. Accordingly, the rejection is misplaced.

Accordingly, for the reasons stated above, Applicants respectfully submit that the Office Action's rejection is improper and, therefore, respectfully request withdrawal of the rejection.

Claims Rejected—35 U.S.C. § 103

Claims 1-6, 10, 12-17, and 21 are rejected under 35 U.S.C. § 103(a) as being unpatentable over *Enterprise Modeling and Simulation: Complex Dynamic Behavior of a Simple Model of Manufacturing*, Hewlett-Packard Journal, December 1994, at 80 by Mujtaba ("Mujtaba") in view of Official Notice. Applicants respectfully traverse the rejection.

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Claim 1 recites a method of forecasting future orders of parts for products sold to customers, including the steps of: determining a time-course record of orders with respect to each part and extracting low-order-rate parts whose order records show order rate to have fallen below a predetermined level; determining from each such order record at least one parameter indicating a characteristic of orders after the order rate fell below the predetermined level, classifying the extracted low-order-rate parts into multiple categories and using the parameter indicating the characteristic of orders to calculate for each of the multiple categories an order occurrence probability distribution; carrying out Monte Carlo simulation based on the calculated order occurrence probability distributions to determine occurrence rate probability distributions of number of orders during a predetermined period; and forecasting future number of orders of the low-order-rate parts based on the calculated occurrence rate probability distributions of number of orders during the predetermined period.

Mujtaba discloses an enterprise model and simulation to predict system behavior prior to implementing a new solution at the level of business enterprise. More specifically, Mujtaba discloses an enterprise model and simulation to provide estimates of end-of-life inventory and order delivery performance based on interactions of forecast quality, quoted product availability, and material procurement and safety stock policies, as well as others, to show that end-of-life inventories can exist even under ideal environmental conditions.

However, Mujtaba does not teach or suggest each and every feature recited in Claim 1. The Office Action states that Mujtaba discloses a time analysis of orders for products and compares the results of enterprise modeling and simulation for each of the

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products. However, Mujtaba does not disclose determining a time-course record of orders with respect to each part and extracting low-order-rate parts whose order records show order rate to have fallen below a predetermined level, as recited in Claim 1.

Additionally, the Office Action does not cite any portion of Mujtaba that teaches or suggests determining from each order record at least one parameter indicating a characteristic of orders after the order rate fell below a predetermined level, classifying the extracted low-order-rate parts into multiple categories and using the parameter indicating the characteristic of orders to calculate for each of the multiple categories an order occurrence probability distribution, as recited in Claim 1.

Additionally, while Mujtaba mentions a Monte Carlo simulation on page 82, lines 8-11 of the left-hand column, the recitation is a characterization of a separate reference. Additionally, Mujtaba does not describe what a Monte Carlo simulation is, its purpose, how it is used, or any motivation to incorporate the Monte Carlo simulation into the enterprise model and simulation of Mujtaba. To establish *prima facie* obviousness, there must be some suggestion or motivation either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. *See* MPEP § 2143. Additionally, each feature of the rejected claim must be taught or suggested by the prior art of record. *See* MPEP § 2143.03.

Here, the Office Action does not disclose any motivation in the Mujtaba reference or within the knowledge generally available to one of ordinary skill in the art to include a Monte Carlo simulation within the Mujtaba simulation. As such, the Office Action has used impermissible hindsight reconstruction to use the teachings of the present

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application as a motivation to combine a Monte Carlo simulation with the Mujtaba simulation.

Moreover, the Office Action does not cite, and Mujtaba does not disclose, using a Monte Carlo simulation based on calculated order occurrence probability distributions to determine occurrence rate probability distributions of number of orders during a predetermined period, as recited in Claim 1. Such a feature is completely absent from Mujtaba.

Therefore, not only is there an absence of motivation to combine a Monte Carlo simulation with the Mujtaba simulation, there is no teaching or suggestion of a Monte Carlo simulation of the type described in Claim 1.

Further, contrary to the Office Action's assertion, Mujtaba does not teach or suggest forecasting future number of orders of low-order-rate parts based on the calculated occurrence rate probability distributions of number of orders during a predetermined period. Mujtaba merely discloses a simulation illustrating how the existence end-of-life inventory could result even where the inventory should theoretically be zero. See Mujtaba, page 80, lines 19-24 of the left-hand column.

For at least the reasons stated above, Mujtaba does not teach or suggest each and every feature recited in Claim 1. Therefore, Claim 1 is not anticipated by or rendered obvious in view of Mujtaba. Accordingly, Applicants respectfully submit that Claim 1 should be deemed allowable.

Claims 2-6 and 10 depend from Claim 1. Therefore, Applicants respectfully submit Claims 2-6 and 10 should be deemed allowable for the same reasons Claim 1 is allowable, as well as for the additional subject matter recited therein.

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Claim 7 recites a method of forecasting future orders of parts for products sold to customers including, among other steps, determining from each order record an order occurrence probability distribution as a function of time and an order occurrence probability distribution as a function of a ratio of number of orders and carrying out a Monte Carlo simulation based on the calculated order occurrence probability distributions to determine occurrence rate probability distributions of number of orders during a predetermined period.

However, the Office Action does not cite to any portion of Mujtaba that teaches or suggests determining from each order record an order occurrence probability distribution as a function of time and an order occurrence probability distribution as a function of a ratio of number of orders. Also, for the same reasons described above, Mujtaba does not teach or suggest carrying out a Monte Carlo simulation based on the calculated order occurrence probability distributions to determine occurrence rate probability distributions of number of orders during a predetermined period.

Accordingly, the Office Action has failed to establish a *prima facie* case of obviousness with regard to Claim 7. Therefore, Applicants respectfully submit that Claim 7 should be deemed allowable.

Claims 8-9 and 11 depend from Claim 7. Therefore, Applicants respectfully submit Claims 8-9 and 11 should be deemed allowable for the same reasons Claim 7 is allowable, as well as for the additional subject matter recited therein.

"The initial burden in on the examiner to provide some suggestion of the desirability of doing what the inventor has done." MPEP § 2142. "If the examiner does

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not produce a *prima facie* case, the applicant is under no obligation to submit evidence of nonobviousness." *Id.*

The Office Action states that Claims 12-21 are unpatentable for the same reasons asserted against Claims 1-11. However, Claims 1-11 are directed to a method comprising one or more steps, whereas Claims 12-21 are directed to a system comprising one or more means-plus-function features. As such, the Office Action's reasons asserted against Claims 1-11 are not applicable to the features of Claims 12-21. Additionally, the Office Action does not cite any portion of Mujtaba teaching or suggesting any feature recited in any of Claims 12-21. Therefore, Applicants respectfully submit that the Office Action has failed to establish a *prima facie* case of obviousness. Accordingly, Applicants are under no obligation to submit evidence of nonobviousness.

For the reasons set forth above, Applicants respectfully request withdrawal of the rejection.

Conclusion

In view of the foregoing, reconsideration of the application, withdrawal of the outstanding objections and rejections, allowance of Claims 1-22, and the prompt issuance of a Notice of Allowability are respectfully solicited.

Should the Examiner believe anything further is desirable in order to place this application in better condition for allowance, the Examiner is requested to contact the undersigned at the telephone number listed below.

In the event this paper is not considered to be timely filed, Applicants respectfully petition for an appropriate extension of time. Any fees for such an extension, together

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with any additional fees that may be due with respect to this paper, may be charged to

counsel's Deposit Account No. 01-2300, **referencing docket number 107101-00036**.

Respectfully submitted,

ARENT FOX PLLC

Murat Ozgu
Attorney for Applicants
Registration No. 44,275

Enclosures: Petition for Extension of Time
Check No. _____

Customer No. 004372

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Washington, DC 20036-5339
Telephone: (202) 857-6000

TECH/327082.1

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PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of:

Tameo YANAGINO et al.

Application No.: 09/929,356

Filed: August 15, 2001

Confirmation No.: 8870

Art Unit: 3623

Examiner: Susanna Diaz

Attorney Dkt. No.: 107101-00036

For: METHOD OF AND SYSTEM FOR FORECASTING FUTURE ORDERS IN PARTS INVENTORY SYSTEM

RESPONSE UNDER 37 C.F.R. § 1.111

MAIL STOP AMENDMENT
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Date: September 14, 2006

Sir:

In reply to the Office Action dated June 14, 2006, please amend the above-identified application as set forth below:

Amendments to the claims begin on page 2.

Remarks begin on page 9.

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AMENDMENTS TO THE CLAIMS:

1.   (Currently Amended)   A method of forecasting future orders of parts for products sold to customers, comprising the steps of:

determining a time-course record of orders with respect to each part and extracting low-order-rate parts whose order records show an order rate to have fallen below a predetermined level;

determining from each such order record at least one parameter indicating a characteristic of orders after the order rate fell below the predetermined level, classifying the extracted low-order-rate parts into multiple categories and using the parameter indicating the characteristic of orders to calculate for each of the multiple categories an order occurrence probability distribution;

carrying out Monte Carlo simulation based on the calculated order occurrence probability distributions to determine occurrence rate probability distributions of number of orders during a predetermined period; and

forecasting future number of orders of the low-order-rate parts based on the calculated occurrence rate probability distributions of number of orders during the predetermined period,

wherein the parameter indicating the characteristic of orders is a ratio of number of orders.

2.   (Currently Amended)   A method according to claim 1, further including the steps of:

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determining a time-course record of orders with respect to each part and extracting second low-order-rate parts whose order records show an order rate to have fallen below a second predetermined level higher than said predetermined level;

classifying the extracted second low-order-rate parts into multiple categories and using the parameter indicating the characteristic of orders to calculate for each of the multiple categories an order occurrence probability distribution;

carrying out Monte Carlo simulation based on the calculated order occurrence probability distributions of the second low-order-rate parts to determine occurrence rate probability distributions of number of orders during a predetermined period;

calculating future number of orders of the second low-order-rate parts based on the calculated occurrence rate probability distributions of number of orders during the predetermined period; and

forecasting the future number of orders of the second low-order-rate parts by regression analysis based on order records before order rate fell below the second predetermined level and the calculated number of orders.

3.   (Canceled)

4.   (Canceled)

5.   (Currently Amended)   A method according to claim 1 [[3]], wherein the ratio of number of orders is a ratio of the number of orders after order expired to the number of orders before order expired.

6.   (Currently Amended)   A method according to claim 2 [[4]], wherein the ratio of number of orders is a ratio of the number of orders after order expired to the number of orders before order expired.

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7.   (Currently Amended)   A method of forecasting future orders of parts for products sold to customers, comprising the steps of:

determining a time-course record of orders with respect to each part and extracting low-order-rate parts whose order records show <u>an</u> order rate to have fallen below a predetermined level;

determining from each such order record an order occurrence probability distribution as a function of time and an order occurrence probability distribution as a function of a ratio of number of orders;

carrying out Monte Carlo simulation based on the calculated order occurrence probability distributions to determine occurrence rate probability distributions of number of orders during a predetermined period; and

forecasting future number of orders of the low-order-rate parts based on the calculated occurrence rate probability distributions of number of orders during the predetermined period.

8.   (Original)   A method according to claim 7, wherein the ratio of number of orders is a ratio of the number of orders after order expired to the number of orders before order expired.

9.   (Original)   A method according to claim 7, wherein the extracted low-order-rate parts are classified into multiple categories and the order occurrence probability distribution is determined for each of the multiple categories.

10.   (Original)   A method according to claim 1, further including the steps of:

checking accuracy of the forecast number of orders; and

changing the categories based on a result of checking.

11.   (Original)   A method according to claim 7, further including the steps of:

checking accuracy of the forecast number of orders; and

changing the categories based on a result of checking.

12.   (Currently Amended)   A system for forecasting future orders of parts for products sold to customers, comprising:

time-course order record determining means for determining a time-course record of orders with respect to each part and extracting low-order-rate parts whose order records show an order rate to have fallen below a predetermined level;

order occurrence probability distribution determining means for determining from each such order record at least one parameter indicating a characteristic of orders after the order rate fell below the predetermined level, and for classifying the extracted low order-rate parts into multiple categories and using the parameter indicating the characteristic of orders to calculate for each of the multiple categories an order occurrence probability distribution;

Monte Carlo simulation means for carrying out Monte Carlo simulation based on the calculated order occurrence probability distributions to determine occurrence rate probability distributions of number of orders during a predetermined period; and

forecasting means for forecasting future number of orders of the low-order-rate parts based on the calculated occurrence rate probability distributions of number of orders during the predetermined period,

wherein the parameter indicating the characteristic of orders is a ratio of number of orders.

13.   (Currently Amended)   A system according to claim 12, further including:

second time-course order record determining means for determining a time-course record of orders with respect to each part and extracting second low-order-rate parts whose order records show an order rate to have fallen below a second predetermined level higher than said predetermined level;

second order occurrence probability distribution determining means for classifying the extracted second low-order-rate parts into multiple categories and using the parameter indicating the characteristic of orders to calculate for each of the multiple categories an order occurrence probability distribution;

Monte Carlo simulation means for carrying out Monte Carlo simulation based on the calculated order occurrence probability distributions of the second low-order-rate parts to determine occurrence rate probability distributions of number of orders during a predetermined period;

order calculating means for calculating future number of orders of the second low-order-rate parts based on the calculated occurrence rate probability distributions of number of orders during the predetermined period; and

forecasting means for forecasting the future number of orders of the second low order-rate parts by regression analysis based on order records before order rate fell below the second predetermined level and the calculated number of orders.

14.   (Canceled)

15.   (Canceled)

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16.   (Currently Amended)   A system according to claim 12 [[14]], wherein the ratio of number of orders is a ratio of the number of orders after order expired to the number of orders before order expired.

17.   (Currently Amended)   A system according to claim 13 [[15]], wherein the ratio of number of orders is a ratio of the number of orders after order expired to the number of orders before order expired.

18.   (Currently Amended)   A system for forecasting future orders of parts for products sold to customers, comprising:

time-course order record determining means for determining a time-course record of orders with respect to each part and extracting low-order-rate parts whose order records show an order rate to have fallen below a predetermined level;

order occurrence probability distribution determining means for determining from each such order record an order occurrence probability distribution as a function of time and an order occurrence probability distribution as a function of a ratio of number of orders;

Monte Carlo simulation means for carrying out Monte Carlo simulation based on the calculated order occurrence probability distributions to determine occurrence rate probability distributions of number of orders during a predetermined period; and

forecasting means for forecasting future number of orders of the low-order-rate parts based on the calculated occurrence rate probability distributions of number of orders during the predetermined period.

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19.   (Original)   A system according to claim 18, wherein the ratio of number of orders is a ratio of the number of orders after order expired to the number of orders before order expired.

20.   (Original)   A system according to claim 18, wherein the extracted low-order-rate parts are classified into multiple categories and the order occurrence probability distribution is determined for each of the multiple categories.

21.   (Currently Amended)   A system according to claim 12, further including the steps of:

checking means for checking accuracy of the forecast number of orders; and

changing means for changing the categories based on a result of checking.

22.   (Original)   A system according to claim 18, further including the steps of:

checking means for checking accuracy of the forecast number of orders; and

changing means for changing the categories based on a result of checking.

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REMARKS

The Office Action dated June 14, 2006, has been received and carefully noted. The above amendments and the following remarks are submitted as a full and complete response thereto.

By this Amendment, claims 3, 4, 14 and 15 have been canceled and claims 1, 5-7, 12-13, 16-18 and 21 have been amended. No new matter is presented. Claims 1, 2 5-13 and 16-22 are pending and respectfully submitted for consideration.

Rejection under 35 U.S.C. § 101

Claims 1-22 were rejected under 35 U.S.C. § 101 because the claimed invention is directed to non-statutory subject matter. As noted above, claims 3, 4, 14 and 15 have been canceled. The Office Action took the position that:

> "[w]hile claims 1-22 produce a useful and concrete result, the produces result is not clearly tangible. In other words, the result is not recited in such a manner that it has an effect in the real-world. For example, the result is never converted into any output that is clearly conveyed in the real-world nor is it used to effect any real-world actions.

The Applicants respectfully submit that the claimed invention produces a useful, concrete, and tangible result in accordance with MPEP § 2106(II)(A) and State Street Bank & Trust Co. v. Signature Financial Group, Inc., 149 F.3d 1368, 1373 (Fed. Cir. 1998). Therefore, the Office Action's assertion on page 3, lines 6-17 that the claimed invention is not tangible as it does not set forth a practical application that generates a real-world result is misplaced.

What constitutes a "useful, concrete, and tangible result" has been resolved on a case-by-case basis. A "useful, concrete, and tangible result" has been held to encompass the result of a mathematical calculation applied to any concrete item, such

as dollars or orders. For example, a process that transforms data, representing discrete dollar amounts, by a machine through a series of mathematical calculations into a final share price, constitutes a *practical application* of a mathematical algorithm, formula, or calculation, because it produces `a *useful, concrete and tangible result*`--a final share price momentarily fixed for recording and reporting purposes and even accepted and relied upon by regulatory authorities and in subsequent trades. See State Street Bank & Trust Co., 149 F.3d at 1373 (emphasis added).

In this case, as stated in the specification of the present application, being able to accurately forecast low-order-rate parts allows the manufacturing industry to resolve whether or not to discard the dies used to manufacture the parts and to perform inventory management to meet the demand from users, dealers and the like, for parts, particularly low-order-rate-parts. See page 1, lines 28 to page 2, line 10 of the specification.

The Applicants traverse the rejection and respectfully submit that the present invention produces a clearly tangible result that has a practical application, specifically, forecasting future numbers of orders of low-order rate parts.

Claims 1, 2, 5-13 and 16-22 are directed to a method and system for forecasting future parts orders in part inventory management, particularly a method and a system for forecasting future number of orders or demand of low-order-rate parts whose order rates have fallen below a predetermined level. Specifically, Claims 1, 2 and 5-11 produce a forecast of future number of orders of low-order-rate parts based on calculated occurrence rate probability distributions of number of orders during a predetermined period. Claims 12, 13 and 16-22 recite, among other features, a

forecasting means for forecasting future number of order of low-order-rate parts based on calculated occurrence rate probability distributions of number of orders during a predetermined period. Accordingly, Claims 1, 2, 5-13 and 16-22 do produce a tangible result, and, therefore, a practical application, contrary to the assertion by the Office Action.

For at least the above reasons, the Applicants respectfully submit that Claims 1, 2, 5-13 and 16-22 are directed to statutory subject matter as defined by 35 U.S.C. § 101, and request withdrawal of the rejection.

Rejections Under 35 U.S.C. § 112

Claims 2, 4, 6, 13, 15 and 17 were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. As noted above, claim 4 has been canceled.

The Applicants respectfully submit that the "second predetermined level" refers to a greater amount of parts ordered over the amount of parts ordered in the "predetermined level". Therefore, the second predetermined level is "higher" than the predetermined level, because more parts are ordered at the second predetermined level than at the predetermined level. See page 5, lines 21-25 of the Specification. The second time-course order record determining means determines a record of orders. Further calculations are made based on determining the record of orders. See page 5, lines 9-14 of the Specification as originally filed. The record of orders is used to determine whether the order rate has fallen below a second predetermined level. If so, second low-order-rate parts are extracted.

The Office Action also took the position that "the results of this determination step is never used again; therefore, it is not clear what the significance of this step is in

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relation to the invention as a whole, especially the fact that the second low-order-rate parts have fallen below a second predetermined level higher than a [first] predetermined level." See page 4, lines 10-14 of the Office Action. The Applicants respectfully submit, however, that the results of the determination step are used to extract second low-order-rate parts, which are classified by the second order occurrence probability distribution means.

Claim 17 is dependent from claim 13 and was rejected for the same reason. Claims 2 and 6 were rejected for the same reason as claims 13 and 17. The Applicants note that the Examiner requested correction and/or clarification. As the Applicants have clarified the meaning of the second time-course order record determining means and the order rate having fallen below a second predetermined level higher than the first predetermined level, the Applicants respectfully submit that claims 2, 6, 13, and 17 are definite, and respectfully request withdrawal of the rejection under 35 U.S.C. § 112, second paragraph.

Rejections Under 35 U.S.C. § 103

Claims 1-22 were rejected under 35 U.S.C. § 103(a) as being unpatentable over McConnell et al. (U.S. Patent Publication No. 2001/0049690 A1, "McConnell") in view of Price ("How to Prepare Inventory Forecasts for Very Low Demand Items"). As noted above, claims 3, 4, 14 and 15 have been canceled. McConnell was cited for disclosing a system for forecasting future orders of parts for products sold to customers. The Office Action acknowledged that McConnell does not disclose Monte Carlo simulation means for carrying out Monte Carlo simulation based on the calculated order occurrence probability distributions to determine occurrence rate probability distributions

of numbers of orders during a predetermined period. Price was cited for curing this deficiency.

McConnell discloses an item velocity monitoring system capable of detecting when sales (or other movement activities) of an item are occurring too quickly, or too slowly. The item velocity monitoring system is first "trained" in a learning mode of operations, during which item patterns and group patterns are evaluated and placed into a pattern database. The system then compares the observed item velocity to its model probability velocity, and if the observed item velocity deviates beyond the statistical model, a "velocity event" is generated, declaring one of the above selling "too quick" or "too slow" conditions. Once a velocity event is detected, an event handling routine displays the event, and can transmit the event information over a network (including the INTERNET) to a remote computer for additional analysis or record keeping.

Price discloses that the stocking criteria for very low demand items is often arbitrary and results in either an excessive inventory or a reduction in service, depending on whether the quantity stocked turns out to be too large or too small. Monte Carlo simulation was used to compare two methods of forecasting for very low demand items. The two methods were: (1) simple exponential smoothing, and (2) the Bayesian approach. The simulation of the two forecasting methods assumed that the demands would occur randomly in a "Poisson distribution" pattern. While neither model worked "best" in all situations, simple exponential smoothing performs reasonably well. Bayesian forecasting methods may work better for this type of forecast in the future, but in their present form, they do not. See the text of Price.

As a preliminary matter, the Applicants respectfully submit that McConnell fails to disclose or suggest additional features of the invention beyond those acknowledged in the Office Action. Claim 1 recites determining from each such order at least one parameter indicating a characteristic of orders after the order rate fell below the predetermined level and that the parameter indicating the characteristic of orders is a ratio of number of orders. Claim 7 and 18 recite an order occurrence probability distribution as a function of a ratio of number of orders. The Office Action took the position that paragraphs 39, 40, 62, 68, 71, 74, 84, 112, 115 and 130 to 140 of McConnell disclose this feature of the invention. In contrast, McConnell merely discloses adjustments indexed by item and effect. See paragraph [0128] of McConnell. There is no disclosure or suggestion in McConnell of the characteristic of an order, as recited in claims 1 and 12.

With respect to claims 1, 7, 12 and 18, the Applicants respectfully submit that the combination of McConnell and Price fails to disclose or suggest the claimed features of the invention. Claims 1 and 7 further recite carrying out Monte Carlo simulation based on the calculated order occurrence probability distributions to determine occurrence rate probability distributions of number of orders during a predetermined period. Claims 12 and 18 further recite Monte Carlo simulation means for carrying out Monte Carlo simulation based on the calculated order occurrence probability distributions to determine occurrence rate probability distributions of number of orders during a predetermined period.

The Office Action acknowledged that McConnell does not disclose a Monte Carlo simulation. Price was cited for curing this deficiency. In contrast, Price discloses a

study using Monte Carlo simulation to compare two methods of forecasting for very low demand items. There is no disclosure or suggestion in Price that the Monte Carlo simulation determines occurrence rate probability distributions of number of orders during a predetermined period. As such, Price fails to cure the deficiencies in McConnell. Accordingly, the combination of McConnell and Price fails to disclose or suggest the features of the invention as recited in claims 1, 7, 12 and 18.

Under U.S. patent practice, the PTO has the burden under §103 to establish a *prima facie* case of obviousness. In re Fine, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). Both the case law of the Federal Circuit and the PTO itself have made clear that where a modification must be made to the prior art to reject or invalidate a claim under §103, there must be a showing of proper motivation to do so. The mere fact that a prior art reference could arguably be modified to meet the claim is insufficient to establish obviousness. The PTO can satisfy this burden only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references. Id. In order to establish obviousness, there must be a suggestion or motivation in the reference to do so. See also In re Gordon, 221 USPQ 1125, 1127 (Fed. Cir. 1984) (prior art could not be turned upside down without motivation to do so); In re Rouffet, 149 F.3d 1350 (Fed. Cir. 1998); In re Dembiczak, 175 F.3d 994 (Fed. Cir. 1999); In re Lee, 277 F.3d 1338 (Fed. Cir. 2002). The Office Action restates the advantages of the present invention to justify the combination of references. There is, however, nothing in the applied references to evidence the desirability of these advantages in the disclosed structure.

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In view of the above, the Applicants respectfully submit that the Office Action has failed to establish a *prima facie* case of obviousness for purposes of a rejection of claims 1, 7, 12 and 18 under 35 U.S.C. §103.

Conclusion

The Applicants respectfully submit that claims 1, 7, 12 and 18 are allowable. Claims 2, 5, 6 and 10 depend from claim 1; claims 8, 9 and 11 depend from claim 7; claims 13, 16, 17 and 21 depend from claim 12; and claims 19, 20 and 22 depend from claim 18. The Applicants respectfully submit that these dependent claims incorporate the patentable aspects thereof, and are therefore allowable for at least the same reasons. Accordingly, the Applicants respectfully request withdrawal of the rejections, allowance of claim claims 1, 2, 5-13 and 16-22, and the prompt issuance of a Notice of Allowability.
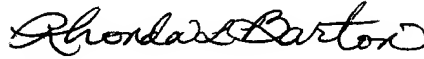
Should the Examiner believe anything further is desirable in order to place this application in better condition for allowance, the Examiner is requested to contact the undersigned at the telephone number listed below.

In the event this paper is not considered to be timely filed, the Applicants respectfully petition for an appropriate extension of time. Any fees for such an extension, together with any additional fees that may be due with respect to this paper,

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may be charged to counsel's Deposit Account No. 01-2300, **referencing Attorney Dkt.**

No. 107101-00036.

Respectfully submitted,

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